



Proposal Response RFP# GK8-77WTP

Interim Water Treatment Plant

Gold King Mine Cement Creek Mining District, Silverton, Colorado

For

**United States Environmental Protection Agency Region VIII Emergency
and Rapid Response Services Contract Task Order # 77**

AUGUST 26, 2015

Omni Water Solutions - Treating Water with Respect

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1.0 General Scope of Work

Environmental Restoration, LLC (ER), working under ERRS Region 8 Contract Number EPS81302 for the U.S. Environmental Protection Agency (EPA), is tasked with procuring and managing the installation, operation and maintenance of an interim water treatment plant (IWTP) designed to manage water discharged from the Gold King Mine – 7 Level adit in San Juan County near Silverton, Colorado.

Omni Water Solutions, Inc. is proposing to fulfill all the requirements for RFP GK8-77, including design, installation, operation, and maintenance of the IWTP.

1.1 Site Background

The Upper Gold King Mine – 7 Level portal is located at elevation 11,450 feet on the north side of the North Fork Cement Creek, approximately eight miles north of Silverton, Colorado. During an investigation phase the material holding back the mine pool failed and released an estimated 3 million gallons of water. The mine is currently discharging approximately 500gpm of water (recent analysis included as Attachment E) that requires treatment to raise pH and remove dissolved metals and suspended solids.

2.0 Project Technical Requirements

EPA has directed ER to procure an interim water treatment plant for the treatment of mine discharge for an emergency response action at the Gold King Mine Site in Colorado. The system will be located in Gladstone, Colorado. The objective of the treatment system is to provide for neutralization of the discharge; high percentage removal of the solids and metals through flocculation and coagulation; elimination of any color within the discharge; and containerization of manageable solids for offsite disposal. Maintaining neutral effluent pH is critical. The system must be mobilized and operational within 21 days of award. The system must be able to be operated all year at an elevation of approximately 10,500'. The location is on a county road that is maintained. Extreme cold and heavy snow are to be expected and planned for. The system must be self-contained as there are no amenities on site. Due to the immediate need for mobilization of the system, redundancy and the ability to address operational contingencies without delay is critical. Another type of treatment technology may be proposed if the vendor believes it is superior to the above technology. Vendor must provide past full scale experience with similar site characteristics on a minimum of three past projects along with references and contact information. Bidder should be familiar with FAR 52.229 – Buy American Act in securing materials for the project.

3.0 Omni Treatment Approach

Omni is proposing two plans, depending on the level of pH adjustment and solids removal desired.

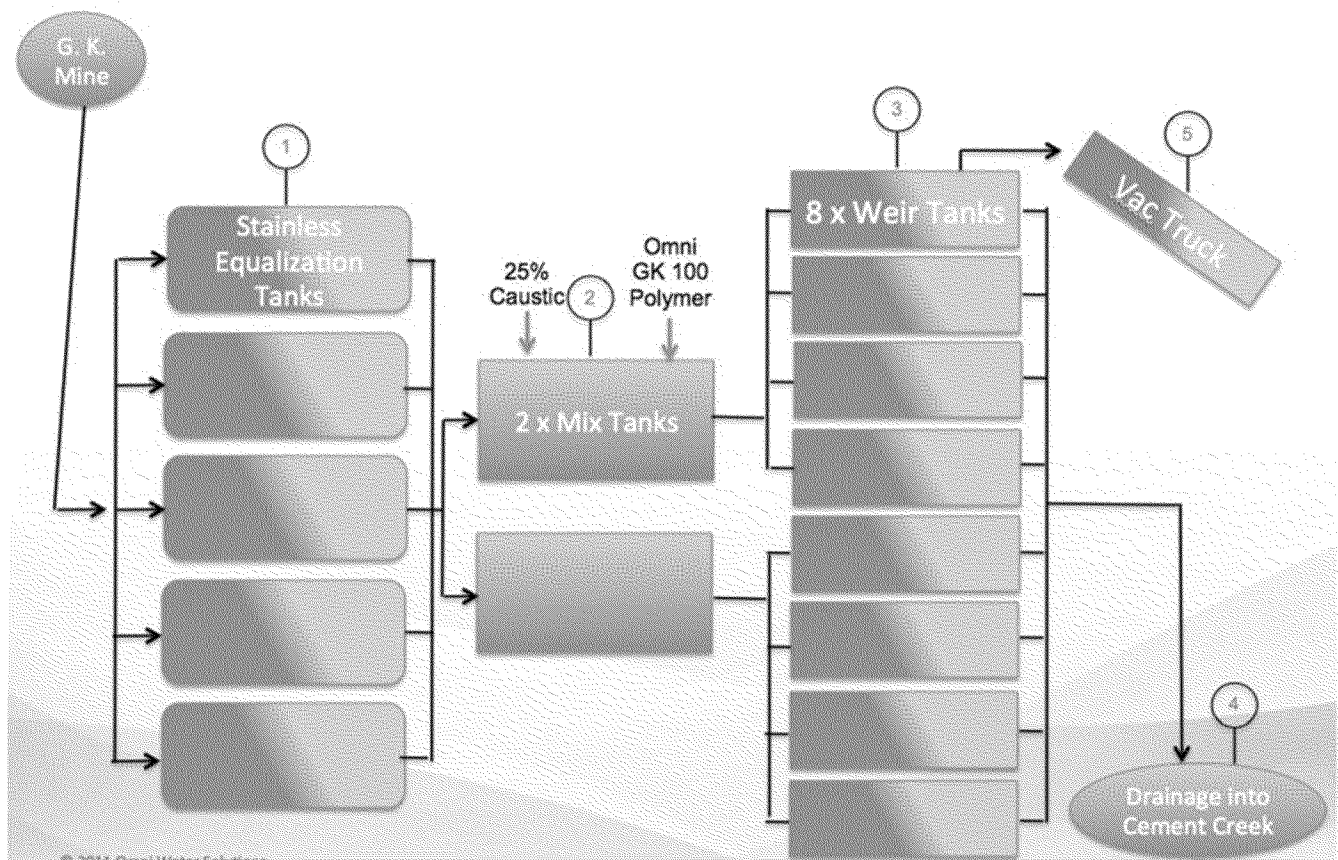
3.01 Plan A

- ☐ Equalize mine discharge flow and pressure
- ☐ Increase pH to 5.0 to 6.0
- ☐ Flocculate iron and suspended solids
- ☐ Clarify treated water using weir tanks
- ☐ Pump out weir tanks using vacuum trucks

3.02 System Schematic

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3.03 Treatment System

all components are currently available

- ☐ 4 Stainless steel equalization tanks, 18,000 gallons each
- ☐ 2 Mix Tanks, each with 2 chemical injection nozzles, 18,000 gallons each
- ☐ 8 Weir Tanks, plumbed as redundant treatment trains
- ☐ Treated drainage line
- ☐ Vacuum trucks for removal of slurried solids

3.04 Chemicals Used

- ☐ all chemicals will be accompanied with the appropriate SDS
- ☐ 25% sodium hydroxide (caustic)
- ☐ GK 100 Flocculent

3.05 Solids Management

- ☐ How they are generated, stored, moved, disposed of
- ☐ 2 to 3 vacuum trucks per day, 4,000 gallons each

3.06 System Power Requirements

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- ☐ 125 kVA – provided by E.R.

3.07 Winterization and Winter Months Maintenance

- ☐ All system components enclosed in Weatherport type enclosure designed for snow load

3.08 Upset Conditions & Contingency Plan

- ☐ System is built for full redundancy

3.09 Analytics – QA/QC

- ☐ pH

3.10 Expected Constituent Reduction

- ☐ Suspended Solids – 70% expected
- ☐ Iron
- ☐ ???

3.11 Pricing

- ☐ \$75,000 mobilization and \$50,000 demobilization
- ☐ \$68,000 equipment fee plus \$9,500/day operating fee
- ☐ Pricing can be allocated to project phases

4.01 Plan B

- ☐ Equalize mine discharge flow and pressure
- ☐ Increase pH to 7.0 to 8.0
- ☐ Flocculate iron and suspended solids
- ☐ Clarify treated water using inclined plate clarifiers
- ☐ Dewater solids using belt presses
- ☐ Solids storage in rolloff boxes

4.02 System Schematic

- ☐ Schematic to be provided

4.03 Treatment System

all components are currently available

- ☐ 4 Stainless steel equalization tanks, 18,000 gallons each
- ☐ 2 Mix Tanks, each with 2 chemical injection nozzles, 18,000 gallons each
- ☐ Lime slurry tank and silo
- ☐ 2 inclined plate clarifiers, plumbed as redundant treatment trains
- ☐ Sludge tank

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- ☐ 2 presses – either belt or filter presses
- ☐ 2 Roll-off boxes
- ☐ Treated drainage line

4.04 Chemicals Used

- ☐ all chemicals will be accompanied with the appropriate SDS
- ☐ 25% sodium hydroxide (caustic)
- ☐ GK 100 Flocculent
- ☐ Lime

4.05 Solids Management

- ☐ 30 tons per day of filter cake solids

4.06 System Power Requirements

- ☐ 250 kVA – provided by E.R.

4.07 Winterization and Winter Months Maintenance

- ☐ All system components enclosed in Weatherport type enclosure designed for snow load

4.08 Upset Conditions & Contingency Plan

- ☐ System is built for full redundancy

4.09 Analytics – QA/QC

- ☐ pH

4.10 Expected Constituent Reduction

- ☐ Suspended Solids – 95%+ expected
- ☐ Iron – 90%

4.11 Pricing

- ☐ \$175,000 mobilization and \$100,000 demobilization
- ☐ \$131,000 equipment fee plus \$14,600/day operating fee
- ☐ Pricing can be allocated to project phases

5.0 Project Staffing Plan

Project Staffing Plan – Omni will staff positions using a combination of local and remote personnel. The mix of system operators and technicians which will be staffed locally versus remotely will depend on the number of qualified individual available locally. It's anticipated that all of the technicians and at

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least one operator can be sourced from the Silverton/Durango general area. The remaining operators, the Project manager and the Chief Technologist will be remote employees.

On-Site Operations Team:

The on-site Operations team will consist of the following:

Process Operator

- Responsible for overall team and site safety on assigned shift.
- Customer communication, project reporting, and overall site logistics
- Oversee the complete chemical injection and separation activities and serve as the site point of contact.
- *QA/QC responsibilities

Process Technician

- Responsible for monitoring process tank levels and chemical levels.
- Responsible for sludge dewatering and solids disposal coordination and shipment.
- *QA/QC responsibilities

*QA/QC Technician (First 4 weeks)

- Responsible for calibration of analytical equipment, coordination of sample collection, on-site analysis and coordination of off-site testing and shipments. Additionally, will generate quality control reports .

* This role will be divided between the Process Operator and the Process Technician after one month, eliminating one team member from the field operations team and taking it down to a 2 man per shift operation for the long term project.

Staffing Model:

Work Schedule (Operators and Technicians):

- ☐ Employees will work 12 hour shifts on a 2 week on / 1 week off rotation. Employees will alternate between day shift and night shift with each successive rotation.
- ☐ If travel time is required, it will occur during the employee's week off to allow each employee a full two weeks working at the Gladstone Water Treatment Facility. Remote employees will be compensated for travel.
- ☐ Operators and technicians will assist with the installation and commissioning of the water treatment equipment.

Work Schedule (Chief Technologist and Project Manager):

- ☐ During construction and the first 4 weeks of operations, the project manager will be on location to oversee all activities. After the first 4 weeks, the project manager will be available by phone 24/7 and on location as necessary to ensure quality operations and to conduct site audits.
- ☐ The Chief Technologist will be on locations during commissioning of the water treatment equipment and for at least the first 2 weeks of operation. After that time, the Chief Technologist will be available by phone 24/7 and on location as needed.

Worker Training:

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- ☐ All workers will be required to have adequate training so that they shall be OSHA compliant to work on hazardous waste sites. Omni will work with ER and the EPA to identify the specific training necessary to meet OSHA and EPA requirements.
- ☐ All workers will be required to have completed: First aid and CPR, Spill Prevention, and Fall Prevention, HAZCOM.
- ☐ All workers shall have completed training on Evacuation and Emergency Planning
- ☐ All personnel on site will be informed of all applicable or relevant and appropriate requirements (ARARs). Omni will work with ER and the EPA to identify the AR ARs.
- ☐ All workers will receive weather related training
- ☐ Construction workers shall have completed a course on Construction Industry Hazards and Prevention Strategies or equivalent:
- ☐ Omni employees will receive SafeLandUSA training or equivalent.
- ☐ Omni employees will receive Omni training on Safety, treatment equipment operations and maintenance, and water treatment processes.

Omni employees will receive HAZWOPER Training

6.0 Teaming Partners and Subcontractors

- ☐ Rain for Rent – Various tanks, pumps, piping
- ☐ Agreement – to be provided

7.0 Project Schedule – written narrative with assumptions of work hours & days, holidays, weather interruptions, etc. - Jay

Gladstone Water Treatment Facility Schedule	Start	End	
Proposal Submittal	26-Aug	26-Aug	
Pre-Award			
Investigate Grid Power Feasibility at Gladstone location	27-Aug	?	
Research and Identify Construction Subcontractors	27-Aug	?	
Begin establishing logistics plans and any new Supplier Agreements	27-Aug	?	
Professional Engineer's review and stamp for project plans	3-Sep		
	Days from Award	Assumptions	
Notice to Proceed - Project Award - (Begin)	0	0	After Labor Day
Building	0	0	
Place Order for Prefab Building	0	0	
Provide NTP to Building Contractor and Sub-Contractors	0	0	
Prepare Foundation	2	6	ER already has pad prepared prior to NTP
Construct Building Exterior	7	11	

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Provide Power to Building	9	13	Power available at Gladstone and power company is given go ahead for connecting to existing grid infrastructure. Power company can secure permits and respond quickly
Finish Out Building Interior	11	19	No more than 1 weather delay day
Building Punch List	20	20	Ongoing inspection by ER rep so concerns can be address real time
Complete Building Punch List Items	21	21	
Water Treatment System			
Provide NTP to Water Treatment Suppliers	0	0	
Order Long Lead Time Items	0	0	
Mobilize and Stage Major Equipment Items	2	7	No more than 1 weather delay day
Set Major Equipment	8	11	Crane access to Gladstone area is not inhibited by weather
Set Support Equipment	12	13	
Complete Equipment Process Connections	12	17	ER has completed pipeline for getting water to the IWTPs inlet at pressure prescribed by Omni
Complete Equipment Electrical Connections	12	17	
Treatment Facility Commissioning	18	18	
Shakedown of System / Treatment Punch List	19	20	
Demonstration of Meeting Discharge Specifications / Complete Treatment Punch List	21	21	Ongoing inspection by ER rep so concerns can be address real time
Completion (Begin Production / System Fully Functional)	21	21	Access roads to facility remain open throughout the construction period

8.0 Redundancy & Contingencies - Gary

9.0 Environmentally Friendly Practices/Sustainability

It is the policy of Omni Water Solutions, Inc. to conduct business in a socially responsible and ethical manner that seeks to protect the environment. By emphasizing and encouraging innovative and creative solutions, and continually improving our environmental performance, Omni strives to be a leader in Environmental Practices.

Omni pledges to:

- ☐ Integrate environmental protection into every aspect of its business.
- ☐ Comply with all State and Federal environmental regulations.
- ☐ Follow relevant standards, good engineering practices and risk management principles to ensure environmental protection activities are conducted responsibly.
- ☐ Utilize work fleets that employ cleaner fuels with appropriate mpg ratings.
- ☐ Perform preventative maintenance on all equipment
- ☐ Utilize renewable energy where appropriate

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- ☐ Follow a strict policy of logistical planning that includes limited shipments, local purchasing and carpooling.
- ☐ Ensure adequate resources are available to comply with this policy.
- ☐ Conserve company and natural resources by careful management of emissions and discharges, and by minimizing waste generation.
- ☐ Require that all employees are held responsible for compliance with all policies, procedures, practices and laws applicable to their duties.

10.0 Omni Responsibilities

- ☐ Design, build, install, operate, maintain, and demobilize an WTP for an emergency response action in Gladstone, Colorado at the Gold King Mine Site
- ☐ Neutralize the discharge, remove a high percentage of the solids and metals, eliminate color within the discharge, and containerize the manageable solids for offsite disposal by ER.
- ☐ Adjust and maintain neutral pH in the effluent from the treatment process
- ☐ Mobilize and begin operations within 21 days of award
- ☐ Operate all year at an elevation of 10,500' in conditions including heavy snow and extreme cold
- ☐ System should be self-contained since there are no amenities on site
- ☐ Provide redundancy and the ability to address operational contingencies without delay
- ☐ Plumb in to 6" HDPE feed line and 6" back-up line providing mine water to location, with appropriate valves to use either or both lines
- ☐ Provide Health and Safety Plan for installation and operation
- ☐ Provide payment and performance bonds
- ☐ Participate in site meetings as needed
- ☐ Obtain all required licenses and permits
- ☐ During work activities, remove all rubbish, trash, garbage, and construction debris and place in approved disposal site or container.
- ☐ Follow all pertaining ARAR's in reference to performing work on this site.
- ☐

11.0 ER Responsibilities

- ☐ Grade location in Gladstone, Colorado and develop access for 18-wheel trucks
- ☐ Location dimensions: tbd
- ☐ Truck access requirements: tbd
- ☐ Convey mine water to the location in 6" HDPE line with backup line, supplying mine water at 60 psi to treatment location
- ☐ Manage all wastes generated during operation of the IWTP, including provision and removal of waste containers.
- ☐ Responsible for disposal of any and all contaminated waste streams emanating from Gold King Mine and IWTP
- ☐ Ship waste material off site in compliance with EPA CERCLA off-site rule and all existing laws and regulations of the United States, State, County, Township or other Governmental agency, where applicable. All offsite disposal including manifesting, documentation, and final disposition shall be performed by the ER Response Manager and signed and approved by the EPA OSC prior to removal and transportation for disposal.
- ☐ Provide waste containers and disposal of site waste including consumables required in treating and

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testing mine discharge, solids produced in treatment process, and all trash and debris associated with treatment operations.

12.0 Reporting & Communication Plan

To ensure that project communication is timely and effective, a stakeholder list will be created and maintained along with a communication matrix identifying the following: communication type, purpose of communication, delivery method, originator, target audience, communication frequency, and the desired outcome of the communication. A combination of meetings and written reports will be used to communicate project status. Written reports, sent via email to reduce waste, will be the primary mechanism for communicating project status. The primary meetings and reports expected are listed below:

- **Safety Meeting – Tailgate Meeting:** Each day will begin with a Safety/Tailgate meeting to provide a high level discussion of the days planned activities, identify the associated risks involved, outline safe work practices, and provide workers with an opportunity to voice concerns or requests for support needed that day. Included in this meeting will be a discussion on the potential impact of environmental factors on planned activities. It will also serve as an opportunity to coordinate work activity between different groups. A report will not be generated as a result of this meeting. However, items discussed could be used to complete the Daily Work Report. All onsite workers are required to attend this meeting.
- **Daily Progress Meeting –** At the end of each day, a representative from each group will attend the Daily Progress Meeting. This meeting will be used to update each group on the progress made that day and any issues or delays identified. The meeting will also serve to gather information necessary for completing the Daily Work Report.
- **Daily Work Report (Activity Log) –** An example Daily Work Report is included. This report will be completed as part of the Daily Progress Meeting and will capture the following information: Summary of daily work activities planned; Summary of daily activities completed; Discussion on actions to take to remedy incomplete work and prevent delays; New open action items; Project Risks/Issues/Setbacks; and finally safety concerns.
- **Weekly Work Report –** The weekly work report will summarize the week's progress and issues into a single document (email). In addition, it will include a high level discussion on overall project schedule, budget, change orders, etc. This report will be provided to the Environmental Restoration Response Manager.

13.0 Clean Up

A well maintained site is key to sustaining a safe work site. In an effort to control waste, sub-contractors to Omni will be encouraged to minimize the amount of packing materials, excess construction materials, etc. brought to the location. Sub-contractors will also be held accountable for removing their construction related wastes. For situations where this approach isn't feasible, Omni will provide roll-off bins for the collection and removal of construction debris and garbage. Site inspections will be conducted daily at the end of the Daily Progress Meeting to identify garbage, construction debris, and unused materials which need to be addressed. Omni will only use approved vendors for hauling and disposing of trash. Bins will be emptied on a scheduled basis or when full.

During facility operations, the same principle will be employed. Suppliers will be encouraged to use only the minimum packing materials. Efforts will also be implemented to reduce office waste, save paper, and encourage electronic transmission of documents when feasible. Recycling will also be

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implemented were feasible. Specific areas will be identified and marked accordingly for the storage of empty totes and other large similar items until they can be properly disposed of or recycled. The site will be inspected and policed daily to remove trash and maintain a workplace in keeping with the beautiful surroundings.

In an effort to reduce traffic to the facility and promote environmentally friendly practices, Omni work crews will carpool to the site from Silverton. Shipment to the site will be bundle when possible to reduce traffic. No idling practices will also be in place.

14.0 Reference Projects

14.1 Marathon Oil Waste Water Treatment Project



Project Description:

Omni is treating water that is a by-product of Marathon's oil and gas production in South Texas that is contaminated with bacteria, suspended solids, iron, chlorides, boron, and other problem constituents. Using a multi-step sequence of technologies, Omni creates both fresh water and purified brine that Marathon uses to hydro-fracture and work-over oil and gas wells. The process has been running 24/7 continuously since June 2013 and has treated approximately 100 million gallons to date.

Type of Contract: Price per barrel (42 gallons) treated with minimum effluent specifications.

Client Contact: Kerry Harpole, Water Management Supervisor – Eagle Ford Asset Team, (713) 296-2722, kgarpole@MarathonOil.com

Role of Omni: Design, build, mobilize, operate, and maintain treatment system.

Omni's Work Performed: approximately 50,000 man-hours to date, 100% of work

Treatment Objective:

The treatment objective was to process contaminated water produced after hydro-fracturing oil and gas wells so it could be re-used in subsequent hydro-fracturing and work-over operations.

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Since the customer uses a cross-link polymer system in their frac jobs, naturally occurring boron of 90 – 110 PPM was causing premature cross-linking and needed to be reduced to less than 10 PPM. Additionally, iron, hardness, and bacteria levels were all exceeding specifications.

Treatment Approach:

Omni built and deployed a system utilizing chemical oxidation, flocculation, solids separation, media filtration, and reverse osmosis. Analytics include pH, turbidity, conductivity, and ORP. An on-board operating system automatically performs maintenance tasks such as filter backwashes and allows a single operator to control the entire system.

Pre and Post Treatment Analysis compared to Objective:

Running continuously since June 2013, the Omni system has consistently delivered water quality that meets or exceeds the customer's specifications. System uptime has averaged 85% and exceeds 90% over the last 6 months. Untreated, target level, and treated level water quality analysis is provided below.

Marathon Oil Sugarhorn Treatment Project Results			
Contaminant	Untreated Level (mg/L)	Target Level (mg/L)	Treated Level (mg/L)
Total Dissolved Solids	45,200	< 50,000	385
Iron	41.5	< 10	< 0.2
Bicarbonates as CaCO ₃	330	< 1,000	< 20
Sulfates	28	< 250	< 0.2
Hardness	6,200	< 500	35
Bacteria	Septic	< 800,000 CFU	< 100,000 CFU
Boron	101	< 10	3
Magnesium	150	< 50	0.13
Calcium	2,240	< 1,500	13.8

Project's Current Percentage Complete & Performance Time Period:

The project has been extended twice with the current phase of the project scheduled through November 2016, making it 63% complete. Marathon has indicated the potential of additional extensions beyond 2016.

Accident Record:

One (1) incident, zero lost time.

DBA Applied?

14.2 ConocoPhillips Waste Water Treatment Project

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Project Description:

Omni treated water that is a by-product of ConocoPhillips' oil and gas production in New Mexico that is contaminated with bacteria, suspended solids, iron, hardness, and other problem constituents. Using a multi-step sequence of technologies, Omni creates a purified brine that ConocoPhillips uses to hydro-fracture oil and gas wells. The process ran 24/7 between July and August 2014 and treated approximately 3.6 million gallons.

Type of Contract: Price per barrel (42 gallons) treated with minimum effluent specifications.

Client Contact: to be provided

Role of Omni: Design, build, mobilize, operate, and maintain treatment system.

Omni's Work Performed: approximately 2,500 man-hours, 100% of work

Treatment Objective:

The treatment objective was to process contaminated water produced after hydro-fracturing oil and gas wells so it could be re-used in subsequent hydro-fracturing jobs. The customer uses a slick water frac system and wanted to eliminate bacteria, suspended solids, and iron while controlling pH.

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Treatment Approach:

Omni built and deployed a system utilizing chemical oxidation, flocculation, and solids separation using weir tanks and filter bags. Analytics include pH, turbidity, conductivity, and ORP. An operator and a technician managed the system, including changing filter bags and removing settled solids from weir tanks.

Pre and Post Treatment Analysis compared to Objective:

The Omni system consistently delivered water quality that met or exceeded the customer's specifications. Omni was the third treatment company invited to try to meet the customer's specifications and the only one that was successful. System up time has exceeded 95%. Untreated, target level, and treated level water quality analysis is provided below.

ConocoPhillips Wilder Treatment Project Results					
Criteria/Constituent	Untreated Level		Target Level		Treated Level
Bacteria	Septic		< 750,000	CFU	< 100,000
Iron	200	mg/L	< 5		< 2
Suspended Solids	300	mg/L	< 5 micron		< 5 micron
pH	5.6 - 6.8		7.0 - 7.5		7.0 - 7.5
Turbidity		NTU	< 10		< 5
Minimize waste volume			Minimal		< 5% of vol. treated

Project's Current Percentage Complete & Performance Time Period:

The project ran for 7 weeks and is 100% complete.

Customer Feedback:

Thank you Jay, and all your team. In my opinion you guys did a good job out there. I was really impressed with your equipment, knowledge, and attention to detail. You gave us a great product and did it in a very safe matter.

I second that. Omni's professionalism, quality assurance and technology was impressive. Thank you guys for all your hard work.

Accident Record:

Zero incidents, zero lost time.

DBA Applied?

14.3 Foreland Resources

Project Description:

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Omni treated water that is a by-product of Foreland's oil and gas production in West Texas that was contaminated with bacteria and suspended solids. Using chemical oxidation, flocculation, and sludge dewatering, Omni clarified and disinfected the fluid so Foreland could use it to hydro-fracture oil and gas wells. The process ran daylight hours between July and August 2014 and treated approximately 3.6 million gallons.

Type of Contract: Price per barrel (42 gallons) treated with minimum effluent specifications.

Client Contact: to be provided

Role of Omni: Design, build, mobilize, operate, and maintain treatment system.

Omni's Work Performed: approximately 2,500 man-hours, 100% of work

Treatment Objective:

The treatment objective was to process contaminated water produced after hydro-fracturing oil and gas wells so it could be re-used in subsequent hydro-fracturing jobs. The customer uses a slick water frac system and wanted to eliminate bacteria, suspended solids, and iron while controlling pH.

Treatment Approach:

Omni built and deployed a system utilizing chemical oxidation, flocculation, and solids separation using weir tanks and filter bags. Analytics include pH, turbidity, conductivity, and ORP. An operator and a technician managed the system, including changing filter bags and removing settled solids from weir tanks.

Pre and Post Treatment Analysis compared to Objective:

The Omni system consistently delivered water quality that met or exceeded the customer's specifications. Omni was the third treatment company invited to try to meet the customer's specifications and the only one that was successful. System up time has exceeded 95%.

15.0 Health & Safety

In the last 365 days, Omni Water Solutions has had 1 lost time incident and has an EMR rating of .93. To date, Omni has not received any stop work notices from customer or operators and employs a strong internal STOP WORK policy. Any employee, at any time, may stop any operation he/she feels creates an unsafe work environment.

16.0 Insurance – To be provided

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